

TRANSACTIONS of the AMERICAN FISHERIES SOCIETY

Volume 114, 1985

LIBRARY
NATIONAL MARINE FISHERIES SERVICE
HONOLULU LABORATORY
P. O. BOX 3830
HONOLULU, HAWAII 96812

PUBLISHED BIMONTHLY AT LAWRENCE, KANSAS
by the

AMERICAN FISHERIES SOCIETY

AMERICAN FISHERIES SOCIETY

The American Fisheries Society was organized in 1870. Its objectives are conservation, development, and wise utilization of recreational and commercial fisheries, promotion of all branches of fisheries science and practice, and exchange and dissemination of knowledge about fish, fisheries, and related subjects.

Officers, 1984-1985

<i>Past President</i>	JANICE S. HUGHES, Louisiana Department of Wildlife and Fisheries
<i>President</i>	WILLIAM S. PLATTS, United States Forest Service
<i>President-Elect</i>	JOHANNA M. REINHART, Canada Department of Fisheries and Oceans
<i>First Vice-President</i>	SHELBY D. GERKING, Arizona State University
<i>Second Vice-President</i>	STANLEY A. MOBERLY, Alaska Department of Fish and Game
<i>Executive Director</i>	CARL R. SULLIVAN, 5410 Grosvenor Lane, Bethesda, Maryland 20814

Editorial Board, 1984-1985

<i>Editor</i>	ROBERT L. KENDALL, Post Office Box 1150, Columbia, Maryland 21044	
<i>Book Review Editor</i>	JOHN J. NEY, Department of Fisheries and Wildlife Sciences, Virginia Polytechnic Institute and State University, Blacksburg, Virginia 24061	
<i>Associate Editors</i>	WILLIAM B. WRENN ALBERT V. TYLER WILLIAM W. TAYLOR RICHARD L. SAUNDERS ROSEMARIE C. RUSSO NICK C. PARKER DONALD J. ORTH THOMAS G. NORTHCOTE	DOUGLAS L. MITCHUM GEOFFREY C. LAURENCE PETER E. IHSEN DANIEL D. HUPPERT CHURCHILL B. GRIMES DANIEL W. COBLE JOHN BOREMAN WILLIAM J. ADAMS

Membership

Persons interested in the Society and its objectives are eligible for membership. Dues and fees for 1985 are: Active Member \$35 in the United States (\$37 elsewhere); Student and Retired Members \$17.50 (\$19.50); Library Subscribers \$185 (\$191). Individual Members may subscribe to the *Transactions* for \$21 (\$23). Library subscriptions include *Transactions*, *North American Journal of Fisheries Management*, *The Progressive Fish-Culturist*, *Fisheries*, and certain other Society publications. Payment to the American Fisheries Society should be in United States currency or equivalent and remitted to the Executive Director.

Transactions of the American Fisheries Society (ISSN 0002-8487) is published bimonthly by the American Fisheries Society, 5410 Grosvenor Lane, Suite 110, Bethesda, Maryland 20814, USA; POSTMASTER: send address changes to this office. Second class postage paid at Bethesda, Maryland and at additional mailing office. Price per copy: \$15. Undelivered copies will be replaced if the Society's Executive Director is notified by North American subscribers within 3 months, and by other subscribers within 8 months, of publication.

PRINTED BY ALLEN PRESS, INC., LAWRENCE, KANSAS

Copyright © 1985, American Fisheries Society. Individual readers of this journal, and nonprofit libraries acting for them, are freely permitted to make fair use of the material in it. Articles not separately copyrighted are works of the United States Government and may be copied without limit; up to 10 copies of other material may be made for research or teaching purposes. This journal may be quoted in scientific works with a customary acknowledgment of the source. To reprint a figure, table, or other excerpt requires the consent of the Society. Except as noted above, republication or systematic or multiple reproduction of any material in this journal (including abstracts) is permitted only under license from the Society. Address inquiries and notices to the Editor.

TABLE OF CONTENTS OF VOLUME 114

NUMBER 1, JANUARY

C. C. Coutant	1	Striped Bass: Environmental Risks in Fresh and Salt Water
J. Boreman H. M. Austin	3	Production and Harvest of Anadromous Striped Bass Stocks along the Atlantic Coast
J. R. Axon D. K. Whitehurst	8	Striped Bass Management in Lakes with Emphasis on Management Problems
D. E. Stevens et al.	12	The Decline of Striped Bass in the Sacramento-San Joaquin Estuary, California
C. C. Coutant	31	Striped Bass, Temperature, and Dissolved Oxygen: A Speculative Hypothesis for Environmental Risk
W. J. Matthews	62	Summer Mortality of Striped Bass in Reservoirs of the United States
T. E. Cheek et al.	67	Influences of Water Quality on Distribution of Striped Bass in a Tennessee River Impoundment
J. L. Moss	77	Summer Selection of Thermal Refuges by Striped Bass in Alabama Reservoirs and Tailwaters
W. J. Matthews et al.	84	Depth Distribution of Striped Bass and Other Fish in Lake Texoma (Oklahoma-Texas) during Summer Stratification
C. P. Goodyear	92	Relationship between Reported Commercial Landings and Abundance of Young Striped Bass in Chesapeake Bay, Maryland
K. S. Price et al.	97	Nutrient Enrichment of Chesapeake Bay and Its Impact on the Habitat of Striped Bass: A Speculative Hypothesis
C. P. Goodyear	107	Toxic Materials, Fishing, and Environmental Variation: Simulated Effects on Striped Bass Population Trends
L. J. Buckley et al.	114	Comparative Swimming Stamina, Biochemical Composition, Backbone Mechanical Properties, and Histopathology of Juvenile Striped Bass from Rivers and Hatcheries of the Eastern United States
D. T. Westin et al.	125	Effects of Parental and Dietary Organochlorines on Survival and Body Burdens of Striped Bass Larvae
F. D. Martin et al.	137	Importance of Food Supply to Nutritional State of Larval Striped Bass in the Potomac River Estuary
C. P. Goodyear et al.	146	Maryland Striped Bass: Recruitment Declining below Replacement

Book Reviews

R. Methot R. Eisler J. B. Woody Q. Bone W. J. Matthews	152	Global Fisheries: Perspectives for the 1980s; Aquatic Toxicology; Conserving Sea Turtles; Fish Biomechanics; The Vanishing Fishes of North America
	158	Guide for Authors

NUMBER 2, MARCH

G. J. Glova M. J. Duncan	165	Potential Effects of Reduced Flows on Fish Habitats in a Large Braided River, New Zealand
B. Jonsson	182	Life History Patterns of Freshwater Resident and Sea-Run Migrant Brown Trout in Norway
G. L. Larson S. E. Moore	195	Encroachment of Exotic Rainbow Trout into Stream Populations of Native Brook Trout in the Southern Appalachian Mountains
A. Keast J. M. Eadie	204	Growth Depensation in Year-0 Largemouth Bass: The Influence of Diet
K. J. Roberts et al.	214	Contingent Valuation of Recreational Diving at Petroleum Rigs, Gulf of Mexico
W. F. Gale W. G. Deutsch	220	Fecundity and Spawning Frequency of Captive Tessellated Darters—Fractional Spawners
R. F. Leary et al.	230	Developmental Instability as an Indicator of Reduced Genetic Variation in Hatchery Trout
R. L. Wilmot C. V. Burger	236	Genetic Differences among Populations of Alaskan Sockeye Salmon
C. G. Rogier et al.	244	Electrophoretic Analysis of Genetic Variability in a Landlocked Striped Bass Population
E. P. Smith	250	Statistical Comparison of Weighted Overlap Measures
R. C. Ready et al.	258	A New Estimator of, and Factors Influencing, the Sampling Variance of the Linear Index of Food Selection
D. A. Neitzel C. D. Becker	267	Tolerance of Eggs, Embryos, and Alevins of Chinook Salmon to Temperature Changes and Reduced Humidity in Dewatered Redds
D. E. Watenpaugh et al.	274	Temperature Tolerance of Nitrite-Exposed Channel Catfish
C. F. Ellsaesser et al.	279	Analysis of Channel Catfish Peripheral Blood Leucocytes by Bright-Field Microscopy and Flow Cytometry
Y. R. Malhotra S. Munshi	286	First Feeding and Survival of <i>Aspidoparia morar</i> Larvae (Cyprinidae)
C. E. Boyd	291	Chemical Budgets for Channel Catfish Ponds
C. E. Boyd	299	Pond Evaporation

Notes

R. D. Davis et al.	304	Daily Growth Increments in the Otoliths of Young-of-the-Year Gizzard Shad
M. V. Hoyer et al.	307	Use of Otoliths to Determine Age and Growth of Largemouth Bass in Florida

Book Reviews

D. J. Faber K. R. McKaye P. R. Mundy S. E. Belanger G. W. Barlow G. C. Garman	310	The Larvae of Indo-Pacific Coral Reef Fishes; Evolutionary Ecology of Neotropical Freshwater Fishes; Key Papers on Fish Populations; Aquatic Toxicology and Hazard Assessment: Sixth Symposium; Reproduction in Reef Fishes; Stream Ecology: Application and Testing of General Ecological Theory
--	-----	---

NUMBER 3, MAY

- | | | |
|-----------------------------------|-----|--|
| S. J. Gutreuter
R. O. Anderson | 317 | Importance of Body Size to the Recruitment Process in Large-mouth Bass Populations |
| L. E. Flath
J. S. Diana | 328 | Seasonal Energy Dynamics of the Alewife in Southeastern Lake Michigan |
| A. B. Powell
A. J. Chester | 338 | Morphometric Indices of Nutritional Condition and Sensitivity to Starvation of Spot Larvae |
| M. D. McGurk | 348 | Effects of Net Capture on the Postpreservation Morphometry, Dry Weight, and Condition Factor of Pacific Herring Larvae |
| J. W. Smith
C. A. Wenner | 356 | Biology of the Southern Kingfish in the South Atlantic Bight |
| M. F. Nammack
et al. | 367 | Life History of Spiny Dogfish off the Northeastern United States |
| R. Quirós
C. Baigún | 377 | Fish Abundance Related to Organic Matter in the Plata River Basin, South America |
| D. M. Rimmer | 388 | Effects of Reduced Discharge on Production and Distribution of Age-0 Rainbow Trout in Seminatural Channels |
| C. R. Berry, Jr.
R. Pimentel | 397 | Swimming Performances of Three Rare Colorado River Fishes |
| R. D. Chew
M. A. Hamilton | 403 | Toxicity Curve Estimation: Fitting a Compartment Model to Median Survival Times |
| K. H. Koltes | 413 | Effects of Sublethal Copper Concentrations on the Structure and Activity of Atlantic Silverside Schools |
| D. E. Canfield, Jr.
et al. | 423 | Plasma Osmotic and Electrolyte Concentrations of Largemouth Bass from Some Acidic Florida Lakes |
| R. E. Taylor
B. Kynard | 430 | Mortality of Juvenile American Shad and Blueback Herring Passed through a Low-Head Kaplan Hydroelectric Turbine |

Comments

- | | | |
|---|-----|---|
| T. Shardlow
R. Hilborn
R. M. Peterman
et al. | 436 | Density-Dependent Catchability Coefficients |
|---|-----|---|

Book Reviews

- | | | |
|----------------|-----|---------------------|
| E. J. Crossman | 441 | Fishes of Wisconsin |
|----------------|-----|---------------------|

NUMBER 4, JULY

International Symposium on the Early Life History of Fishes
and Eighth Larval Fish Conference

- | | | |
|----------------------|-----|---|
| J. B. Marliave | 444 | Introduction |
| D. F. Alderdice | 445 | A Pragmatic View of Early Life History Studies of Fishes |
| R. F. Shaw
et al. | 452 | Transport of Larval Gulf Menhaden <i>Brevoortia patronus</i> in Continental Shelf Waters of Western Louisiana: A Hypothesis |

A. D. Rijnsdorp et al.	461	Selective Tidal Transport of North Sea Plaice Larvae <i>Pleuronectes platessa</i> in Coastal Nursery Areas
M. Tanaka	471	Factors Affecting the Inshore Migration of Pelagic Larval and Demersal Juvenile Red Sea Bream <i>Pagrus major</i> to a Nursery Ground
J. A. Koslow et al.	478	Anatomy of an Apparent Year-Class Failure: The Early Life History of the 1983 Browns Bank Haddock <i>Melanogrammus aeglefinus</i>
J. J. Graham D. W. Townsend	490	Mortality, Growth, and Transport of Larval Atlantic Herring <i>Clupea harengus</i> in Maine Coastal Waters
N. Daan et al.	499	Predation by North Sea Herring <i>Clupea harengus</i> on Eggs of Plaice <i>Pleuronectes platessa</i> and Cod <i>Gadus morhua</i>
G. M. Knutsen S. Tilseth	507	Growth, Development, and Feeding Success of Atlantic Cod Larvae <i>Gadus morhua</i> Related to Egg Size
C. L. Brownell	512	Laboratory Analysis of Cannibalism by Larvae of the Cape Anchovy <i>Engraulis capensis</i>
C. A. Mills et al.	519	Sources of Variation in the Feeding of Larval Dace <i>Leuciscus leuciscus</i> in an English River
A. Scott	525	Distribution, Growth, and Feeding of Postemergent Grayling <i>Thymallus thymallus</i> in an English River
J. A. Rice et al.	532	Evaluating Otolith Analysis for Bloater <i>Coregonus hoyi</i> : Do Otoliths Ring True?
J. M. Hinshaw	540	Effects of Illumination and Prey Contrast on Survival and Growth of Larval Yellow Perch <i>Perca flavescens</i>
E. B. Taylor J. D. McPhail	546	Burst Swimming and Size-Related Predation of Newly Emerged Coho Salmon <i>Oncorhynchus kisutch</i>
E. B. Taylor J. D. McPhail	552	Ontogeny of the Startle Response in Young Coho Salmon <i>Oncorhynchus kisutch</i>
G. Quantz	558	Use of Endogenous Energy Sources by Larval Turbot <i>Scophthalmus maximus</i>
W. Kwain G. A. Rose	564	Growth of Brook Trout <i>Salvelinus fontinalis</i> Subject to Sudden Reductions of pH during Their Early Life History
P. J. Rombough J. O. T. Jensen	571	Reduced Water Uptake and Resistance to Deformation in Acid-Exposed Eggs of Steelhead <i>Salmo gairdneri</i>
J. E. Bodammer	577	Corneal Damage in Larvae of Striped Bass <i>Morone saxatilis</i> Exposed to Copper
S. S. De Silva M. K. Perera	584	Effects of Dietary Protein Level on Growth, Food Conversion, and Protein Use in Young <i>Tilapia nilotica</i> at Four Salinities
V. Øiestad et al.	590	Mass Production of Atlantic Cod Juveniles <i>Gadus morhua</i> in a Norwegian Saltwater Pond
J. J. Akielaszek et al.	596	Experimental Culture of Young Rainbow Smelt <i>Osmerus mordax</i>
R. Hermes	604	Distribution of Neustonic Larvae of Hakes <i>Urophycis</i> spp. and Four-beard Rockling <i>Enchelyopus cimbrius</i> in the Georges Bank Area
T. Senta I. Kinoshita	609	Larval and Juvenile Fishes Occurring in Surf Zones of Western Japan

- K. Hjelmeland
T. Jørgensen
- 619 Evaluation of Radioimmunoassay as a Method to Quantify Trypsin and Trypsinogen in Fish

Book Reviews

- T. D. Smith
J. L. Anderson
R. D. Evans
J. A. Bowers
A. V. Zale
T. A. Grudzien
- 622 Fish Stock Assessment: A Manual of Basic Methods; Bioeconomics of Aquaculture; Principles of Lake Sedimentology; Zooplankton of the Great Lakes: A Guide to the Identification and Ecology of the Common Crustacean Species; Distribution, Biology, and Management of Exotic Fishes; Evolution of Fish Species Flocks

NUMBER 5, SEPTEMBER

- B. J. Shuter
et al.
- R. I. Fletcher
- P. B. Moyle
D. M. Baltz
A. D. Lemly
- R. V. Frie
G. R. Spangler
- H. L. Schramm, Jr.
A. V. Zale
- B. G. Rehnberg
et al.
- D. A. Wismer
et al.
- A. L. Jensen
D. Palawski
et al.
- D. D. Dauble
et al.
- J. H. Kerby
et al.
- 631 An Application of Ecological Modelling: Impact of Thermal Effluent on a Smallmouth Bass Population
- 652 Risk Analysis for Fish Diversion Experiments: Pumped Intake Systems
- 695 Microhabitat Use by an Assemblage of California Stream Fishes: Developing Criteria for Instream Flow Determinations
- 705 Suppression of Native Fish Populations by Green Sunfish in First-Order Streams of Piedmont North Carolina
- 713 Dynamics of Rainbow Smelt during and after Exploitation in South Bay, Lake Huron
- 725 Effects of Cover and Prey Size on Preferences of Juvenile Large-mouth Bass for Blue Tilapias and Bluegills in Tanks
- 732 Olfactory Sensitivity during Parr and Smolt Developmental Stages of Coho Salmon
- 737 An Empirical Model of Size Distributions of Smallmouth Bass
- 743 Comparison of Catch-Curve Methods for Estimation of Mortality
- 748 Sensitivity of Young Striped Bass to Organic and Inorganic Contaminants in Fresh and Saline Waters
- 754 Avoidance of a Water-Soluble Fraction of Coal Liquid by Fathead Minnows
- 761 Growth, Survival, and Harvest of Striped Bass Produced with Cryopreserved Spermatozoa

Notes

- I. M. Chisholm
W. A. Hubert
- 766 Expulsion of Dummy Transmitters by Rainbow Trout

Book Reviews

- D. M. Porter
B. A. Knuth
- 768 Introduction to Freshwater Vegetation; The Common Fisheries Policy of the European Community

Errata

- 770 Production and Harvest of Anadromous Striped Bass along the Atlantic Coast (J. Boreman and H. M. Austin); Comments: Density-Dependent Catchability Coefficients (R. M. Peterman et al.)

NUMBER 6, NOVEMBER

W. G. Layher O. E. Maughan D. E. Campton J. M. Johnston N. R. Foster	771 Relations between Habitat Variables and Channel Catfish Populations in Prairie Streams
	782 Electrophoretic Evidence for a Genetic Admixture of Native and Nonnative Rainbow Trout in the Yakima River, Washington
	794 Lake Trout Reproductive Behavior: Influence of Chemosensory Cues from Young-of-the-Year By-Products
T. K. Sowden G. Power	804 Prediction of Rainbow Trout Embryo Survival in Relation to Groundwater Seepage and Particle Size of Spawning Substrates
J. Buckley B. Kynard	813 Yearly Movements of Shortnose Sturgeons in the Connecticut River
E. L. Bozeman et al.	821 Population Size and Home Range of American Eels in a Georgia Tidal Creek
B. A. Costa-Pierce et al.	826 Effects of Polyculture and Manure Fertilization on Water Quality and Heterotrophic Productivity in <i>Macrobrachium rosenbergii</i> Ponds
M. J. Harris G. D. Grossman	837 Growth, Mortality, and Age Composition of a Lightly Exploited Tilefish Substock off Georgia
L. E. Barger	847 Age and Growth of Atlantic Croakers in the Northern Gulf of Mexico, Based on Otolith Sections
P. E. Carothers M. E. Chittenden, Jr.	851 Relationships between Trawl Catch and Tow Duration for Penaeid Shrimp
R. B. Pierce et al.	857 Influence of River Stage on Shoreline Electrofishing Catches in the Upper Mississippi River
L. W. Hall, Jr. et al.	861 Mortality of Striped Bass Larvae in Relation to Contaminants and Water Quality in a Chesapeake Bay Tributary
K. S. Mayer et al.	869 Waste Transformer Oil and PCB Toxicity to Rainbow Trout
D. F. Woodward et al.	887 Leaching of Retorted Oil Shale: Assessing the Toxicity to Colorado Squawfish, Fathead Minnows, and Two Food-Chain Organisms
T. A. Heming et al.	895 Acute Toxicity of Thiocyanate to Trout

Notes

S. A. Leider	906 Precise Timing of Upstream Migrations by Repeat Steelhead Spawners
J. G. Daly R. M. W. Stevenson	909 Importance of Culturing Several Organs to Detect <i>Aeromonas salmonicida</i> in Salmonid Fish
R. L. Herman J. W. Meade	911 Gill Lamellar Dilations (Telangiectasis) Related to Sampling Techniques

Book Reviews

C. C. Davis D. F. Stauffer M. A. Cairns E. F. Klima	914 Methods in Marine Zooplankton Ecology; The Interpretation of Ecological Data: A Primer on Classification and Ordination; Fundamentals of Aquatic Toxicology: Methods and Applications; Penaeid Shrimp—Their Biology and Management
--	--

919 Referee Acknowledgments

922 Index to Volume 114

i Table of Contents, Volume 114